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The Files

25 June 1958

Contract RD-103, Task Orders 1, 3 and 5

1. The [] was visited 12 and 13 June 1958 to inspect the progress of Contract RD-103, Task Orders 1, 3 and 5. The following persons were contacted:

2. On 13 June, the [] was tested from the contractor's site into the AS-4 at []. The test results were good over this 2300 mile path. Similar tests were conducted the week previous into the AS-4A system with equally good results. This RS-16A unit, No. 714, had recently been inspected by the [] engineers. The coder was oiled, new commutator brushes and other worn parts were replaced in the coder. Aside from the output tuning changes required to fire the set into a rhombic antenna and then on the whip antenna, no other adjustments were made. It has been found that an RF filter is required when operating the RS-16A with conventional 12 volt storage batteries. Another important point is that a message must be rewritten into the coder after a battery change or voltage change for best results. The RS-16A set has been returned to Washington and will be used to transmit to the AS-4 in Los Angeles on 18 June 1958.

3. Regarding recent developments concerning the conversion of AS-4 equipment to AS-4A's the question was raised as to whether the AS-5 would ever have to work into five channel AS-4 equipment. The contractor has been advised that the AS-5 will be required to operate with five channel systems in order to be compatible with the AS-4A. Consequently, it could inter-operate with AS-4 equipment. The AS-4A is a 5-channel system without the 6th channel, which is used for error correction. Five channel operation will also be required for the AS-5 to receive the RS-16A. The next question is whether this AS-4 relay should be modified for the 45 Kw linear transmitter, []. The AS-4A's will be modified to incorporate this capability.

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Using the AS-4 as an intermediate station or relay this much power does not seem necessary. An interesting possibility has been brought up by the contractor as results of incorporating the linear transmitter.

kilocycles. An effective noise reduction is also realized. Multipath protection is reduced to 4.1 milliseconds which should be adequate.

4. The AS-5 system may also be reduced in bandwidth using a linear transmitter and pulse overlap. The AS-5 antenna coupler problem was raised again during this visit. I described the work being done on antenna couplers by [redacted] meeting with [redacted] personnel on 20 June 1958 should clarify this problem. [redacted] has asked if low speed (60 wpm) automatic encipherment will be required with the AS-5 redundant operation, also AS-4A. The present KX-3 equipment will not operate at this low speed. One hundred cycles per second is cited as the lowest usable frequency in this specification. This problem will be investigated with NSA.

5. Looking into the future I feel that two approaches to our communications systems are advisable to reduce the complexity of the present base stations and to provide flexibility:

a.

b.

OC-2/R&D-EP/PCV:njr (25 June 1958)

cc: R&D Subject File

Monthly Report

R&D Lab

O&T

RD-103T.O. 3

R&D-103, T.O. 5

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